CENTER FOR ASYNCHRONOUS CIRCUIT AND SYSTEM DESIGN

CENTER

The Center for Asynchronous Circuit and System Design was established in 1997 to complete the development of software design tools that will allow engineers to efficiently design digital circuits that do not require a global clock in order to operate.

TECHNOLOGY

While most of today's digital systems use a synchronous global clock to coordinate operations within an integrated circuit, the challenge of distributing such global clock signals becomes increasingly difficult as circuit densities increase. Asynchronous circuits do not require a global clock and therefore do not require clock distribution lines as traditional synchronous circuits do. Industry has not moved to asynchronous design in large part owing to a lack of computer aided design (CAD) tools supporting this technology. Meeting this need is the direct target of this Center. This Center is working with companies such as Intel and IBM not only to help solve their future asynchronous design problems, but also their current difficulties in the analysis and verification of high-speed integrated circuits.

ACCOMPLISHMENTS

The Centers' first patent application representing nearly 100 claims has been filed and is in process at the US Patent Office. Significant design verification work was completed at IBM's Austin Research Laboratory, which has resulted in a non-exclusive license agreement with IBM to evaluate the Center's analysis tool in IBM's design flow. The center continues its collaboration with Sonic innovations, a Utah company, designing digital hearing aids. The Center is designing an asynchronous version of their hearing aid that will significantly reduce circuit size and power consumed. Last year, a new grant was received from the National Science Foundation to explore mixed analog/asynchronous architectures for digital communications. They have designed a test chip that has recently returned from fabrication.

CONTACT

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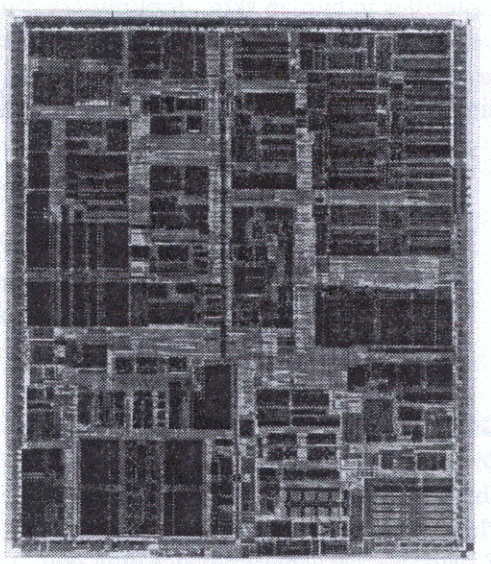
Can You Imagine...

...a personal computer that runs significantly faster than today's models because it does not depend on an internal clock to synchronize its various operations?

THE CENTER DEVELOPS DESIGN TOOLS FOR DIGITAL ENGINEERS CREATING NEW MICROPROCESSORS



The Intel P6 400 MHz microprocessor as seen through a microscope. Up to 30% of the surface area of a high speed microprocessor chip may be required to distribute clocking signals. (Photo courtesy of Intel Corporation)